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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/790,914	03/02/2004	Fengxia Qi	UAB-17404/22	1392

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EXAMINER	
FORD, VANESSA L	

ART UNIT	PAPER NUMBER
1645	

DATE MAILED: 04/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/790,914	QI ET AL.	
	Examiner	Art Unit	
	Vanessa L. Ford	1645	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 January 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14* is/are pending in the application.

4a) Of the above claim(s) *1-8* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *9-14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *02 March 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *4/15//04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

RD

DETAILED ACTION

1. Applicant's response to the Restriction requirement filed on January 18, 2005 is acknowledged. Applicant's election of Group II, claims 9-14 without traverse is acknowledged. Claims 1-8 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected species.

Specification

2. This application also fails to comply the requirements of 37 C.F.R. 1.821-1.825 because it contains amino acid sequences that are not identified. For example, pages 29 and 30 contain sequences that are not identified. Appropriate sequence identifiers should be used to comply with sequence rules. The sequences in the specification should match the sequence listing and computer readable form (CRF) submitted with the application. Applicant is asked to review the specification for sequences that are not identified and correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 9-14 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The claims are directed to a method of treating or preventing an infection in a subject said method comprising administering to said subject an effective amount of a purified and isolated peptide having the amino acid sequence as set forth in SEQ ID NO: 2 or a pharmaceutical acceptable salt , amide, ester or prodrug thereof. The claimed invention broadly encompasses the treatment and prevention of all infections, which includes infections from bacteria, viruses and parasites.

The specification teaches that the invention relates to a purified lanthionine-containing antimicrobial agents, compositions containing the antimicrobial agents and methods for treating employing the antibiotic (page 1). The specification teaches that a therapeutically effective amount is an amount of mutacin I polypeptide, the pharmaceutically acceptable salts, esters, amides and prodrugs thereof, that when administered to a patient or subject ameliorates a symptom of the condition or disorder (page 12). The specification has failed to teach or disclose how the claimed pharmaceutical compositions can be used to treat any or all infectious diseases. The state of the art regarding a few of the bacterial infections, viral infections or parasitic infections encompassed by the claims is cited below:

It is well known in the art that there are several different antigens from *Moraxella catarrhalis* (i.e. outer membrane proteins and lipooligosaccharides). It is also taught

that since infections caused by *Moraxella* predominately occur on mucosal surfaces, the mucosal immune response is likely important as the first line of defense. Mucosal or surface antigen immune response would likely be important in the search for candidate vaccines Kyd et al, *(Vaccine 18 (2000), 398-406)).* It has also been recognized in the art that there is currently no vaccine to prevent *Moraxella catarrhalis* infections because of a lack of good animal models for the diseases, a lack of information about the protective antigens, a lack of *in vitro* correlates to immunity against *Moraxella catarrhalis* in humans and the pathogenic mechanisms and host immune response to the pathogens has yet to be clarified (Samukawa et al, *(The Journal of Infectious Diseases, 2000, 181:1842-5)* and Kyd et al, *(Vaccine 18 (2000), 398-406)*). While studies have been shown that the outer membrane proteins can elicit bacterial antibodies, which promote bacterial clearance, the results have not lead to a predictable vaccine against infections caused by *Moraxella catarrhalis*. A similar situation exists with the development of lipooligosaccharides (LOS) based vaccines against infections caused by *Moraxella catarrhalis* (Gu et al, *Infection and Immunity, May 1998, p. 1891-1897).*

It is well known in the art that *Plasmodium falciparum* is the etiologic agent that causes malaria. Odeh *(Cytokine, April 7;14(1):11-8)* teaches that there is no safe and effective vaccine against malaria (see the Abstract). Fox (*Biotechnology, Vol. 12, February 1994)* teaches that the quest to develop both preventive and therapeutic HIV vaccines is proving a frustrating enterprise. Fox teaches that there are many themes regarding how to approach developing therapeutic agents against HIV infection. Fox teaches that these themes include the use of cytotoxic T lymphocytes, the use of

envelope proteins as vaccines and the use of cytokines to boost the immune system. Fox teaches that despite positive results regarding HIV and AIDS research, no therapy has emerged as a sure winner in the campaign against HIV, not a preventive vaccine nor therapeutic vaccine nor any of the immune-system-boosting treatments. Therefore, the prior art has taught that no "HIV protective epitopes" exist. The etiologic agent associated with ulcerative colitis (an inflammatory disease) is unknown. This is evidenced by Sartor *(Gasreoenterology Clinic of North America (UNITED STATES), September 1995, 24, p. 475-507).* Sartor teaches that ulcerative colitis and Crohn's disease collectively are referred to as inflammatory bowel disease (IBD), are chronic, spontaneously relapsing disorders of unknown cause (see the Abstract). Braegger *(Acta Paediatr Suppl. 395 : 18021, 1994)* teaches that the etiology and pathogenesis of chronic inflammatory bowel disease are unknown (see the Abstract). Fox et al *(Infection and Immunity, April 1999, p. 1757-1762)* suggest that *Helicobacter* species are associated with colitis (the Abstract). The prior art teaches that the cause of inflammatory bowel disease is unknown and that no vaccine for the chronic disease exist. The cited prior art references indicate that it would require undue experimentation to formulate and use a successful vaccine against any, *Plasmodium falciparum, Moraxella catarrhalis*, HIV infections or inflammatory disease without the prior demonstration of vaccine efficacy. The prior art cited has established that problems and barriers exist in vaccine development. The above mentioned infections/diseases are only a few of the infections/disorders that are encompassed by the claimed invention and represent a small subset of the many diseases that exist that have no vaccine that

is effective in treating and/or preventing such infectious diseases. The specification has not shown a correlation between the claimed antibiotic peptides and *Plasmodium falciparum, Moraxella catarrhalis,* HIV infections or chronic inflammatory disease or any other infection or disease. The claimed invention broadly encompasses any infection or disease caused by any microorganism. The pharmaceutical compositions used in the claimed method would not provide treatment or prevention against any bacteria, viruses or parasitic organism. The specification has not provided enablement for the claimed method since there are no working examples in the instant specification that demonstrate effectiveness of the peptide against all microbial infections. One skilled in the art would have to possess the knowledge or be provided with sufficient guidance to determine if the pharmaceutical compositions would reach the target microorganisms in order to treat or prevent infection. It would require undue experimentation by one of skill in the art to determine whether the pharmaceutical compositions used in the claimed method would be effective in treating or preventing any microbial infection or disease.

Factors to be considered in determining whether undue experimentation is required, are set forth in In re Wands 8 USPQ2d 1400. They include (1) the quantity of experimentation necessary, (2) the amount of direction or guidance presented, (3) the presence or absence of working examples, (4) the nature of the invention, (5) the state of the prior art, (6) the relative skill of those in the art, (7) the predictability or unpredictability of the art and (8) the breadth of the claims.

Applying the above test to the facts of record, it is determined that 1) no declaration under 37 C.F.R. 1.132 or other relevant evidence has been made of record

establishing the amount of experimentation necessary, 2) insufficient direction or guidance is presented in the specification with respect to developing a pharmaceutical composition that would achieve a desire level of success when administered to a patient to treat any microbial infection or disease, 3) there are no working examples which suggest the desired results of a successful pharmaceutical composition that is to treat any microbial infection and 4) the relative skill of those in the art is commonly recognized as quite high (post - doctoral level).

In view of all of the above, it is determined that the specification has not provided guidance that would enable one of skill in the art to be able to make and use the claimed invention commensurate in scope with the claims. One of skill in the art would require undue experimentation to determine whether the pharmaceutical compositions used in the claimed method can protect against any microbial infection or diseases.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 9-10are rejected under 35 U.S.C. 102(b) as anticipated by Loyola Rodriguez et al *(Journal of General Microbiology, 1992, Vol. 138, No. 2, p. 269-274).*

Claims 9-10 are directed to a method of treating or preventing an infection in a subject said method comprising administering to said subject an effective amount of a purified and isolated peptide having the amino acid sequence as set forth in SEQ ID NO: 2 or a pharmaceutical acceptable salt, amide, ester or prodrug thereof.

Rodriguez et al teach a method of treating rats against infection caused by *Streptococcus mutans* by administering mutacin in the drinking water of these animals (see the Abstract). Rodriguez et al teach that mutacin may be a candidate for use in dental caries prevention (see the Abstract). The amino acid sequence as set forth in SEQ ID NO: 2 would be inherent in the teachings of the prior art. Rodriguez et al anticipate the claimed invention.

Since the Office does not have the facilities for examining and comparing applicant's method with the method of the prior art, the burden is on the applicant to show a novel or unobvious difference between the claimed method and the method of the prior art (i.e., that the method of the prior art does not possess the same material method steps and parameters of the claimed method). See In re Best, 562 F.2d 1252, 195 USPQ 430 (CCPA 1977) and In re Fitzgerald et al., 205 USPQ 594.

Status of Claims

5. No claims are allowed.

Conclusion

6. Any inquiry of the general nature or relating to the status of this general application should be directed to the Group receptionist whose telephone number is (703) 308–0196.

Papers relating to this application may be submitted to Technology Center 1600, Group 1640 by facsimile transmission. The faxing of such papers must conform with the notice published in the Office Gazette, 1096 OG 30 (November 15, 1989). Should applicant wish to FAX a response, the current FAX number for the Group 1600 is (703) 872-9306.

Any inquiry concerning this communication from the examiner should be directed to Vanessa L. Ford, whose telephone number is (571) 272-0857. The examiner can normally be reached on Monday – Friday from 9:00 AM to 6:00 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lynette Smith, can be reached at (571) 272-0864.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov./>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Vanessa L. Ford
Biotechnology Patent Examiner
April 23, 2005

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